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Cooperative
ECONOMIC INSECT REPORT

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UNITED STATES DEPARTMENT OF AGRICULTURE

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ECONOMIC INSECT SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Branch serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey Section
Plant Pest Control Branch
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Volume 5 January 28, 1955 No. 4

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

Light general infestations of GREENBUG continue in Texas Panhandle. (page 61).

SWEETPOTATO WEEVIL shows increase in Louisiana, Florida and Georgia. (page 62).

BOLL WEEVIL hibernation survey in Georgia. (page 63).

CATTLE GRUBS heavy, widespread in Texas and increasing in northwest Arkansas. Also reported from Maryland. (page 64).

Additional report on WHITE-FRINGED BEETLE in New Jersey. (page 65).

Status of the EUROPEAN CORN BORER in 1954. (page 67).

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Reports in this issue are for the week ending January 21, 1955, unless otherwise designated.

WEATHER FOR THE WEEK ENDING JANUARY 25, 1955

Temperatures last week were persistently below normal, except west of the Great Lakes and in eastern Maine where weekly averages were a few degrees above normal. Minus departures for the week ranged from 4° to 7° in the Ohio Valley, 6° to 9° in the Southeast, and 8° to 10° in the west-central portions of the Great Plains and in the central Great Basin of the far West. Precipitation was moderate to heavy along the West Coast and east of a line joining San Antonio, Texas, and Norfolk, Virginia, but generally light elsewhere. The weather at times was unusually cold in central and southern areas west of the Continental Divide. On the 18th Woodruff, Utah, had a minimum of -23°. On the 21st and 22d freezing was general in Arizona; heavy frost occurred in the Salt River Valley, and light frost in the Yuma area damaged tomatoes and early-planted capped cantaloupes. East of the Rocky Mountains the lowest temperatures occurred in the extreme upper Mississippi Valley at the beginning of the period when a few stations reported minima of -20° or below. Moderate to heavy rains in the South and Southeast furnished additional topsoil moisture, now generally adequate, and helped replenish subsoil moisture which was depleted by summer and fall drought. In northwestern Florida and adjacent areas of Georgia and Alabama where many stations recorded their lowest annual rainfall on record in 1954, rains totaling up to 4 inches were particularly welcome. Moderate rains along the southern California coast were also very beneficial.

In the western portions of the lower Great Plains precipitation was very light, generally amounting to only a few hundredths of an inch, and the need for more moisture remained critical. Snowfall was both frequent and widespread. The snowpack in the Sierra Nevada Mountains was considerably increased and slight increases occurred in the Rocky Mountains. East of the Rocky Mountains depths in extreme north-central areas were increased by 2 to 7 inches of new snow, and present depths range up to 25 inches at Houghton, Michigan. Similar increases occurred in the Northeast where Caribou, Maine, reported a depth of 45 inches on the 24th. On the 19th heavy snow fell over North Carolina and Virginia and the lower Appalachians. Depths in Virginia ranged from 5 inches at Norfolk on the coast up to 15 inches at Abingdon in the southwestern portion of the State and depths in North Carolina ranged from 4 to 12 inches. One to over 3 inches of this snow remained on the ground at the end of the period. The greatest extension of the snow cover occurred in the Mississippi Valley and Great Plains where the ground is now covered as far south as the central portions of Illinois, Missouri, and Kansas. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (*Toxoptera graminum*) - TEXAS - Surveys of 20 panhandle counties show light general infestations continuing. Northern counties averaged 1-5 greenbugs per linear foot. None found in Dallam, Hartley and Lipscomb Counties. One field each in Moore and Hansford Counties averaged 10-30 per linear foot. Southern counties of the panhandle averaged 3-10 per linear foot. A few fields in Randall and Deaf Smith Counties have larger than average populations. Heaviest infestations, 50 per linear foot, were in two irrigated fields in Swisher County. Predator ratio was much lower during this survey than previously reported. (Daniels, Ashdown, Cleveland).

COWPEA APHID (*Aphis medicaginis*) - ARIZONA - Moderate populations on most alfalfa in Eloy area of Pinal County. Control measures have not eliminated populations. (Ariz. Coop. Rept.).

YELLOW CLOVER APHID (*Myzocallis trifolii*) - ARIZONA - Heavy in Santa Cruz County, moderate in Pinal County and fairly light in Yuma County. Cool weather is probably holding populations stationary in all regions. (Ariz. Coop. Rept.).

BROWN WHEAT MITE (*Petrobia latens*) - TEXAS - Symptoms found during survey of panhandle counties but very few mites observed. (Daniels, Ashdown, Cleveland).

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - ARIZONA - Larvae abundant in tips or roots of dead corn plants at Amado, Santa Cruz County. Average of one larva per stalk. (Ariz. Coop. Rept.).

TEXAS LEAF-CUTTING ANT (*Atta texana*) - TEXAS - Heavy widespread infestation on winter cover crop in Cherokee County. Over county, one town of ants per 10 acres of land. (Heald).

ARMYWORM (*Pseudaletia unipuncta*) - ARKANSAS - Continues to appear at light trap at Stuttgart. Four adults taken January 8 and 9. (Warren).

WHITE GRUBS (*Phyllophaga* sp.) - TEXAS - Heavy local infestation on Bermuda pasture in Colorado County. Killing Bermuda turf in pasture. (Moore).

TRUCK CROP INSECTS

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) - Fall surveys that began first of October and continued into December revealed 1,100 infestations compared with 841 for the same quarter in 1953. This represents a 30 percent increase over last quarter of 1953, but for the year the increase was approximately 23 percent. Most of the increase was in the old areas in LOUISIANA, FLORIDA, and GEORGIA with no appreciable increase in number of infestations in ALABAMA, MISSISSIPPI and SOUTH CAROLINA. The population density also appeared heavier than usual. These results are believed due largely to climatic conditions highly favorable to the insect during the past two season. (Sweetpotato Weevil Cont.).

APHIDS - NORTH CAROLINA - Overwintering nymphs and adults on collards in New Havover, Duplin, Pender and Sampson Counties. Infestations rather severe in some localities. (Scott, Farrier).

CABBAGE LOOPER (*Trichoplusia ni*) - ARIZONA - Light larval population on lettuce at Gilbert, Maricopa County. (Ariz. Coop. Rept.). - TEXAS - Medium widespread infestation on lettuce and cabbages in Rio Grande Valley. (Griffith).

BEET ARMYWORM (*Laphygma exigua*) - ARIZONA - Light populations of larvae on lettuce at Gilbert, Maricopa County. (Ariz. Coop. Rept.).

SPIDER MITES (*Tetranychus* sp.) - NORTH CAROLINA - Overwintering populations of eggs and adults on strawberry leaves in Pender County appear to be about normal. (Scott, Farrier).

BEAN LEAF BEETLE (*Cerotoma trifurcata*) - NORTH CAROLINA - Examination of surface wood trash to determine hibernating boll weevil populations in Rowan and Sampson Counties also indicated a rather high overwintering population of bean leaf beetle with an average of 3,969 per acre in Rowan and 3,291 in Sampson. Counts in other counties examined were very low. (Walker, Mitchell).

COTTON INSECTS

Boll Weevil Hibernation Counts Fall 1954 - Georgia: Fall examinations of surface woods trash to determine the number of boll weevils in hibernation were made in four regions from November 23 to December 22, 1954. The average for the State was 99 live weevils per acre compared with 1,984 a year ago. This year's count is the lowest since records have been kept for the last four years. Averages for the different areas sampled were as follows: northwest (Gordon County) 290; north central (Spalding, Butts, Coweta, Meriwether, Henry, Lamar and Pike Counties) 68; east central (Burke County) 0; and south (Tift County) 48. Live weevils were found on only 14 percent of the 49 farms examined. The maximum unumber of weevils per acre found on one farm was 1,936 in Gordon County. The 1954 drought was apparently the principal factor which reduced the boll weevil population. In addition to the low weevil count, there was a definite scarcity of other insects, including beneficial and injurious species, that are ordinarily found hibernating in the trash samples. This is a preliminary survey. Samples from the same farms will be examined during the spring to determine the winter survival of weevils. (Beckham, Dupree).

PINK BOLLWORM (Pectinophora gossypiella) - TEXAS - Inspection in 17 central and west Texas counties shows average of 15 live pink bollworms, or 98 percent of total found, per 100 bolls from debris and 7 live larvae, or 84 percent, per 100 bolls from standing stalks. All of the dead larvae were found in counties in the plains area of west Texas. The mild open winter is reflected in the high percentage of surviving larvae. (PBW Cont. Proj., Jan. 1-15).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

NANTUCKET PINE MOTH (Rhyacionia frustrana) - MARYLAND - Heavily infested 100 acres of Scotch pines (7 years old) at Baltimore City watershed. New and old injury present. (U. Md., Ent. Dept.).

PALES WEEVIL (Hylobius pales) - TEXAS - Continued to infest planted seedlings on an area planted immediately following cutting in Nacogdoches County. (Young).

FLORIDA WAX SCALE (*Ceroplastes floridensis*) - NORTH CAROLINA - Moderate infestation of boxwood at Rocky Mount. (Glover).

TEXAS LEAF-CUTTING ANT (*Atta texana*) - TEXAS - Defoliated pine seedlings in Nacogdoches, Cherokee and Newton Counties. (Young).

BARK BEETLES (*Ips* sp.) - GEORGIA - Heavy damage to longleaf and slash pine in Appling, Coffee and many other south Georgia counties. In Appling County 90 percent of a 50-acre stand destroyed. (Geiger, Murphy, Davenport). - TEXAS - Scattered infestations in Angelina, Houston, Jasper, Newton and Trinity Counties. (Young).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (*Hypoderma* spp.) - TEXAS - Heavy widespread infestation on cattle over entire State. Reports from stockyards in Fort Worth, San Antonio and Houston indicate an increase of about 15 percent in grubs this year over past several years. (Davis). - MARYLAND - Of 90 young beef animals examined on 4 farms in Montgomery County, 53 found infested with 1 to 8 (*H. lineatum*) grubs each. (U. Md., Ent. Dept.). - ARKANSAS - Appearance of *H. lineatum* in backs of cattle on increase in northwest area. Average of 6. 6 grubs per animal in 55 examined. (Warren).

A MANGE MITE - VERMONT - A reported case of sarcoptic mange found on a cat. Four members of the household where the cat belonged were reportedly suffering from eczema. (McCollom).

STORED-PRODUCT INSECTS

STORED-GRAIN INSECTS - ARKANSAS - Infestations of confused flour beetle (*Tribolium confusum*), lesser grain borer (*Rhyzopertha dominica*), flat grain beetles (*Laemophloeus* sp.) and saw-toothed grain beetle (*Oryzaephilus surinamensis*) continue active in the delta area. Temperatures toward center of grain pile in many large storage receptacles remain high enough to favor a build-up. (Warren).

MISCELLANEOUS INSECTS

Additional Report on White-fringed Beetle in New Jersey

The following announcement, dated January 21, 1955, has been released by F. A. Soraci, Chief, Bureau of Entomology, New Jersey Department of Agriculture.

"To the Plant Pest Officials

"On December 3 you received notification of the find in New Jersey of the White-Fringed Beetle, Graphognathus leucoloma, with our promise that you would be notified 'as the work progresses and regulatory measures are taken'.

"The infestation has now been thoroughly scouted and an estimated 35 acres contains larvae. This acreage is under the control of five farmers. Quarantine regulations, in accordance with the broad powers of this Department, prohibiting the movement of any material that has been in contact with the soil have been placed on these properties. These regulations have been accepted. Good compliance is occurring and inspectors are in the area checking on this compliance, along with following down leads for further investigation with regard to the New Jersey infestation.

"Plans have been made to treat for eradication about 350 acres including the infestation and a good perimeter. Dieldrin will be used on both cultivated and uncultivated land. Treatment will begin directly after the first of February.

"We expect approval of a program of intensive scouting of the southern half of this State beginning in early June, at the time adult beetles would be expected to begin emerging. Reliable scouting is most difficult prior to that time. The scouting program is designed to reveal any additional occurrence of beetles.

"The Department has had excellent help from the federal project in the work thus far. The survey work was done with the co-operation of that organization; treating of the land will be done with their help, the survey work beginning in June will be co-operative and it is hoped that any additional technical assistance which might help to bring the problem to a proper conclusion will be available. If you have any questions on the project please do not hesitate to ask them. I would not plan to report again on our progress until the completion of the survey work, possibly October 1, unless there should sooner be some development which would alter our plans."

RECENT IMPORTANT INTERCEPTIONS AT PORTS OF ENTRY

A lepidopterous larva, identified as a species of Lycaenidae, probably Virachola livia Klug , the so-called pomegranate butterfly, was intercepted recently in airplane baggage from Israel at the New York International Airport, New York City. (Andrews, Burnham). One of the five pomegranate fruits intercepted was found infested with a single larva. This represents our first interception of this insect in quarantine.

V. livia Klug. has been reported an important pest of pomegranates in Egypt. It is also said to attack the fruit of the date, loquat, guava, and the pods of manila tamarind, and several other legumes including Acacia arabica, A. farnesiana and A. nilotica and Inga dulce. A species of Acacia is believed to have been its native host. The adult deposits eggs on the fruit or pods. The larvae on hatching burrow in and feed on the flesh and young seeds. Larvae pupate both within and outside the fruit.. V. livia has been reported from Israel, Jordan and Egypt. Related species of Virachola are said to be injurious to pomegranates, peaches, lychee nuts, guava, coffee, Crotalaria or other hosts in parts of Africa and India. (Compiled by Ramsay-Plant Quarantine Branch).

STATUS OF THE EUROPEAN CORN BORER IN 1954

Survey Data Provided by State Agricultural Agencies
Compiled and Summarized by Leo G. K. Iverson
Economic Insect Survey Section, Plant Pest Control Branch
United States Department of Agriculture

Agricultural agencies in 25 States reported on surveys to determine the abundance of the European corn borer (Pyrausta nubilalis) or observations on its distribution, or both, as conducted in 1954. All survey data, whether summaries or data to be summarized, were forwarded by the States to Economic Insect Survey Unit at Minneapolis, Minnesota. This report is a compilation of all information submitted by the State agencies.

Distribution

The European corn borer was known to be present in 37 States in 1953. No additional States were reported as infested in 1954. Several States, however, reported new county records in 1954 indicating a continued spread of the insect. These were as follows: Arkansas 2, North Dakota 2, Oklahoma 2, South Dakota 4, Virginia and West Virginia 2. In addition, 21 counties in Missouri reported to have had infestation for several years are included in this report for the first time.

The area in the United States now known to be infested includes a total of 1, 596 counties as shown on map 1.

The counties reported as first infested in 1954, those in Missouri previously infested but being included in this report for the first time, and agencies providing the reports, are as follows:

Arkansas:
(Ext. Ser.)
Boone
Lee

Missouri:
(Ext. Ser.)
Audrain
Benton
Butler
Caldwell
Callaway
Camden
Carter
Dent
Dunklin
Howell
Laclede
Moniteau
Morgan

Missouri (Cont'd)
Oregon
Pemiscot
Ripley
Reynolds
Shannon
Texas
Wayne
Wright

North Dakota:
(Ext. Ser. 1954 Sur.)
Dunn
Grant

Oklahoma:
(C&F Ins. Sect.)
Muskogee
Sequoyah

South Dakota:
(Expt. Sta. Ext. Ser.
Fall River
Jones
Mellette
Shannon

Virginia:
(Ext. Ser.)
Amelia
Brunswick
Dinwiddie
Greensville
Powhatan
Sussex

West Virginia:
(Dept. of Agr.)
McDowell
Wyoming

Abundance

The 1954 corn borer surveys were conducted after mid-September, thereby measuring the fall population of borers. Twenty-five States completed surveys in 1954 gathering data over an area representing 608 counties. The survey was not as intensive this year as in the past with several States reducing the number of counties surveyed and making surveys on a district rather than a county basis. In all cases, except for minor differences in methods of compiling data, the accepted survey methods were used.

A tremendous buildup of corn borer populations over 1953 was recorded in the 1954 survey. Large areas through central Iowa, northeastern Nebraska and southeastern South Dakota had infestations in excess of 500 borers per hundred stalks in the fall of 1954. Several counties in central Illinois were in the same category. In most counties adjacent to this high population, counts averaged between 300 and 500 borers per 100 stalks. The remainder of the Country had populations very similar to or lower than those of last year.

In the States grouped together in this report and designated as Eastern United States, a substantial decrease in the average population level occurred from 1953 to 1954. In 1954, the average number of borers was 33 against 65 per 100 plants in 1953. Only a few of the counties surveyed had populations over 100 borers per 100 plants in this entire area. In every State in this group, lower average borer counts were recorded, except Massachusetts and New Hampshire.

In the North Central States, the average number of borers per 100 plants continued to increase. An average of 223 borers per 100 plants was found in 1954 compared with 114 for 1953. All States in this group showed an appreciable increase except Kansas, Kentucky, Minnesota, North Dakota and Wisconsin. Iowa reported the heaviest infestation with an average of 497 borers per 100 plants. Seventy-four counties from this area had populations over 500 borers per 100 plants compared with 11 in this category in 1953.

For the entire area of the United States known to be infested with European corn borer, based on comparable counties surveyed during 1953 and 1954, the average number of borers per 100 plants increased from 104 in 1953 to 186 in 1954.

A summary of the 1953 and 1954 surveys by States is given in table 1 and the data for both States and counties are given in table 2. Map 2 shows counties surveyed in 1954 and their approximate infestation levels.

Table 1.--Summary by States of European corn borer abundance in corn, fall of 1954, compared with data for 1953.

State	1953		1954		Counties surveyed both years		
	Number of counties surveyed	Average number of borers per 100 plants	Number of counties surveyed	Average number of borers per 100 plants	Number of counties	Borers per 100 plants 1953	Borers per 100 plants 1954
Eastern U.S.							
Connecticut	8	18	8	8	8	18	8
Delaware	3	181	3	60	3	181	60
Maine	9	37	-	-	-	-	-
Maryland	23	99	23	41	23	99	41
Massachusetts	1	3	1	4	1	3	4
New Hampshire	8	23	7	46	7	18	46
New Jersey	12	59	12	28	12	59	28
New York	17	35	19	17	15	37	19
Pennsylvania	36	46	29	19	26	48	20
Rhode Island	4	107	4	43	4	107	43
Vermont	10	7	5	4	5	6	4
Virginia	8	155	7	123	7	176	125
West Virginia	3	36	3	13	3	36	13
Total - - - -	142		121		114		
Average 1/	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	65	33
North Central States							
Illinois	51	133	44	215	44	196	215
Indiana	31	62	20	102	18	75	96
Iowa	99	163	12*	497	12*	173	497
Kansas	20	44	25	26	20	44	30
Kentucky	25	93	7	52	7	104	52
Michigan	12	11	3**	69	3**	11	69
Minnesota	79	64	65	72	65	77	72
Missouri	43	51	24	148	18	75	169
Nebraska	51	91	33	353	32	116	350
North Dakota	39	15	21	26	16	31	32
Ohio	33	62	30	153	30	62	153
South Dakota	40	258	41	394	40	257	399
Wisconsin	61	27	8***	28	8***	27	28
Total - - - -	584		487		467		
Average 1/	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	114	223
United States							
Total - - - -	726		608		581		
Average 1/	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	104	186

1/ Weighted on basis of number of counties.

* Reported as 12 districts representing 99 counties.

** Reported as 3 districts representing 17 counties.

*** Reported as 8 districts representing 61 counties.

Table 2. --European corn borer abundance in corn, fall of 1954, compared with data for 1953

State and county	Average number of borers per 100 plants	
	1953	1954
Connecticut		
(Agr. Expt. Sta.)		
Fairfield	11	14
Hartford	24	12
Litchfield	8	3
Middlesex	9	6
New Haven	10	4
New London	46	9
Tolland	14	6
Windham	21	6
State mean	18	8
Delaware		
(Agr. Expt. Sta.)		
Kent	100	27
New Castle	36	12
Sussex	407	142
State mean	181	60
Illinois		
(Agr. Expt. Sta.) Natural History Survey Div. Ext. Ser.		
Northwest--		
Bureau	168	325
Jo Daviess	64	140
Mercer	582	763
Ogle	153	422
Whiteside	177	340
Winnebago	102	171
Average	208	360
Illinois (Con't)		
Northeast--		
Boone	59	98
De Kalb	144	324
Du Page	117	134
Lake	45	103
La Salle	371	289
Will	293	445
Average	172	232
West--		
Adams	128	79
Brown-Cass	50	131
Hancock	59	224
Henderson	339	382
Knox	266	240
McDonough	128	330
Warren	480	429
Average	207	259
Central--		
Logan	51	140
McLean	180	490
Macon	8	94
Peoria	350	515
Woodford	504	524
Average	219	353
East --		
Champaign	24	104
Iroquois	573	511
Kankakee	512	519
Livingston	405	677
Vermilion	125	323
Average	328	427

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants		State and county	Average number of borers per 100 plants	
	1953	1954		1953	1954
Illinois (Cont'd)			Indiana		
			(Purdue Agr. Expt. Sta.)		
West Southwest--					
Christian	9	17	Northwest--		
Greene	13	3	Lake	10	-
Macoupin	12	12	La Porte	199	134
Madison	24	4	Porter	156	178
Pike	17	18	St. Joseph	181	160
Sangamon	17	38	Starke	46	213
Average	21	16	Average	118	171
East Southeast--			Northeast--		
Clark	21	20	Adams	127	-
Effingham	22	-	Allen	7	115
Jasper	17	1	Huntington	38	58
Lawrence	21	-	Wells	61	-
Marion	15	-	Whitley	23	-
Moultrie	20	23	Average	51	86
Average	19	14			
			North Central--		
Southwest--			Benton	99	280
Clinton	2	12	Cass	92	137
Jackson	4	1	Clinton	68	92
Randdph	6	11	Delaware	13	-
St. Clair	29	21	Fulton	-	233
Union	7	11	Tippecanoe	99	85
Average	10	11	Tipton	38	-
			Average	68	165
Southeast--					
			South Central--		
Edwards-Wabash	8	-	Hancock	9	-
Franklin	0	3	Hendricks	22	-
Jefferson	0	-	Johnson	53	35
White	Tr*	-	Parke	16	-
Average	2	3	Rush	111	-
			Average	42	35
State mean comparable counties (44)	196	215			

*Trace -- Less than one.

Table 2. -(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954
Indiana (Cont'd)		
Southwest--		
Daviess	28	0
Knox	30	49
Posey	2	0
Sullivan	32	-
Vanderburgh	3	8
Average	19	14
Southeast--		
Bartholomew	78	-
Decatur	52	96
Franklin	148	72
Jefferson	43	23
Jennings	52	-
Miami	-	66
Average	63	64
State mean comparable counties (18)	75	96
Iowa (State Dept. of Agr. and Agr. Expt. Sta.)		
District I--		
Clay	453	
Dickinson	58	
Emmet	319	
Lyon	304	Dist.
O'Brien	367	
Osceola	171	Sur.
Palo Alto	767	
Sioux	647	
Average	395	417
Iowa (Cont'd)		
District II--		
Cerro Gordo	154	
Floyd	126	
Hancock	169	Dist.
Kossuth	225	
Mitchell	64	Sur.
Winnebago	27	
Worth	192	
Average	144	440
District III--		
Allamakee	57	
Chickasaw	133	Dist.
Clayton	102	
Fayette	89	Sur.
Howard	27	
Winneshiek	59	
Average	71	143
District IV--		
Buena Vista	288	
Calhoun	98	
Cherokee	347	Dist.
Ida	500	
Plymouth	464	Sur.
Pocahontas	224	
Sac	249	
Woodbury	306	
	297	577

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	 1954	State and county	Average number of borers per 100 plants 1953	 1954
Iowa (Cont'd)			Iowa (Cont'd)		
District V --			District VIII--		
Butler	117		Boone	112	
Franklin	288		Dallas	235	Dist.
Grundy	225	Dist.	Jasper	179	
Hamilton	228		Marshall	232	Sur.
Hardin	127	Sur.	Polk	135	
Humboldt	164		Poweshiek	119	
Webster	333		Story	144	
Wright	223		Tama	208	
Average	210	794	Average	171	890
District VI --			District IX--		
Black Hawk	584		Benton	360	
Bremer	340		Cedar	203	
Buchanan	92		Iowa	119	Dist.
Clinton	145	Dist.	Johnson	111	
Delaware	96		Keokuk	58	Sur.
Dubuque	222	Sur.	Louisa	39	
Jackson	121		Muscatine	187	
Jones	213		Scott	81	
Linn	143		Washington	22	
Average	212	340	Average	119	579
District VII --			District X--		
Audubon	115		Adair	126	
Carroll	252	Dist.	Adams	220	Dist.
Crawford	294		Cass	130	
Greene	368		Fremont	67	
Guthrie	94	Sur.	Mills	124	Sur.
Harrison	170		Montgomery	124	
Monona	246		Page	111	
Shelby	173		Pottawattamie	139	
Average	215	681	Taylor	50	
			Average	121	463

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954
Iowa (Cont'd)		
District XI--		
Appanoose	35	
Clarke	53	
Decatur	232	
Lucas	60	Dist.
Madison	454	
Mahaska	25	Sur.
Marion	8	
Monroe	22	
Ringgold	95	
Union	130	
Warren	41	
Wayne	6	
Average	80	393
District XII --		
Davis	42	
Des Moines	107	
Jefferson	23	Dist.
Henry	30	
Lee	62	Sur.
Van Buren	26	
Wapello	32	
Average	45	244
State mean comparable districts (12)	173	497

State and county	Average number of borers per 100 plants 1953	1954
Kansas (Ins. Surv.)		
North Central--		
Clay	3	4
Cloud	1	13
Jewell	-	2
Republic	2	1
Washington	10	6
Average	4	5
Northeast--		
Atchison	112	51
Brown	65	27
Doniphan	131	86
Jackson	70	36
Jefferson	63	93
Leavenworth	98	47
Marshall	19	6
Nemaha	32	5
Pottawatomie	5	34
Riley	11	8
Wyandotte	-	42
Average	66	40
Central--		
Dickinson	7	2
East Central-		
Douglas	47	89
Franklin	-	2
Geary	20	1
Johnson	45	33
Miami	-	1
Morris	-	2
Shawnee	57	49
Wabaunsee	23	19
Average	38	24

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954
Kansas (Cont'd)		
State mean comparable counties (28)	44	30
Kentucky (Agr. Expt. Sta.)		
North Central--		
Jefferson	226	64
Shelby	83	33
	154	48
Central--		
Boyle	68	63
Fayette	86	58
Jessamine	85	53
Mercer	63	42
Average	76	54
Southwest		
Warren	114	48
State mean comparable counties (7)	104	52
Maryland (Agr. Expt. Sta.)		
Allegany	20	33
Anne Arundel	37	21
Baltimore	20	17
Calvert	12	10
Caroline	228	78
Carroll	43	12
Cecil	21	21
Maryland (Cont'd)		
Charles	42	10
Dorchester	333	90
Frederick	62	29
Garrett	13	21
Harford	43	20
Howard	72	29
Kent	41	26
Montgomery	89	42
Prince Georges	22	22
Queen Annes	68	37
St. Marys	67	39
Somerset	183	57
Talbot	27	14
Washington	98	136
Wicomico	286	94
Worcester	440	80
State mean comparable counties (23)	99	41
Massachusetts (Agr. Expt. Sta.)		
Franklin	3	14
Michigan (Ext. Ser.)		
Southwest--		
Branch	-	
Calhoun	0	Dist.
Cass	-	
Eaton	0	Sur.
St. Joseph	-	
Average	0	135

Table 2. -- (Cont'd)

State and county	Average number of borers per 100 plants	
	1953	1954
Michigan (Cont'd)		
Southeast --		
Ingham	48	
Jackson	0	Dist.
Lenawee	42	
Livingston	-	Sur.
Monroe	7	
Washtenaw	-	
Average	32	51
East --		
Genesee	-	
Lepeer	-	Dist.
Macomb	-	
Oakland	-	Sur.
Shiawassee	-	
St. Clair	-	
Average	-	20
State average	-	69
Minnesota (State Dept. of Agr.)		
Northwest --		
Becker	19	13
Clay	39	126
Clearwater	4	-
Kittson	2	-
Mahnomen	12	-
Marshall	Tr.	-
Norman	5	-
Pennington	Tr.	-
Polk	11	-
Red Lake	1	-
Average	9	70
Minnesota (Cont'd)		
West Central --		
Big Stone	134	78
Chippewa	194	67
Douglas	58	132
Grant	73	256
Lac qui Parle	146	111
Otter Tail	44	66
Pope	64	159
Stevens	115	112
Swift	116	121
Traverse	132	226
Wilkin	42	180
Yellow Medicine	195	78
Average	109	132
Central --		
Benton	45	6
Carver	73	66
Kandiyohi	62	64
McLeod	62	56
Meeker	61	21
Morrison	47	10
Renville	352	36
Scott	55	60
Sherburne	13	2
Sibley	154	87
Stearns	84	24
Todd	108	12
Wadena	14	2
Wright	99	21
Average	88	33

Table 4. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954	State and county	Average number of borers per 100 plants 1953	1954
Minnesota (Cont'd)			Minnesota (Cont'd)		
East Central --			Southeast --		
Aitkin	Tr.	-	Dakota	49	12
Anoka	23	9	Dodge	37	8
Carlton	Tr.	-	Fillmore	47	27
Chisago	21	11	Goodhue	31	10
Crow Wing	11	-	Houston	46	57
Hennepin	47	23	Mower	43	45
Isanti	23	2	Olmsted	37	8
Kanabec	21	24	Wabasha	64	10
Mille Lacs	3	9	Winona	44	39
Pine	33	12	Average	44	24
Washington	46	8			
Average	21	12			
Southwest --			State mean comparable counties (65)	77	72
Cottonwood	33	104			
Jackson	63	121	Missouri (Agr. Ext. Ser.)		
Lincoln	95	136			
Lyon	109	107			
Murray	90	181	Northern --		
Nobles	113	223	Andrew	10	34
Pipestone	143	129	Atchinson	55	180
Redwood	186	134	Clarke	40	143
Rock	118	230	Davies	45	110
Average	106	152	Knox	21	94
			Mercer	79	361
South Central --			Sullivan	-	108
Blue Earth	66	107	Worth	113	363
Brown	108	65	Average	52	174
Faribault	126	207			
Freeborn	36	50	Central --		
Le Sueur	32	10	Callaway	57	18
Martin	151	152	Carroll	33	275
Nicollet	98	58	Clay	-	68
Rice	63	13	Cole-Osage	18	52
Steele	35	5	Cooper	-	107
Waseca	39	14	Howard	-	129
Watonwan	56	113	Lafayette	8	68
Average	83	72	Pike	14	37

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants	
	1953	1954
Missouri (Cont'd)		
Platte	-	62
Saline	50	182
St. Charles	18	32
Average	32	94
Southeast--		
Butler	-	36
Dunklin	117	24
Mississippi	266	293
New Madrid	312	270
Scott	74	500
Average	192	225*
State mean comparable counties (18)	75	169

*Based on 10 fields in district.

State and county	Average number of borers per 100 plants	
	1953	1954
Nebraska (Agr. Expt. Sta.)		
Northeast--		
Antelope	140	-
Boone	101	387
Boyd	56	-
Burt	403	208
Cedar	171	690
Cuming	145	514
Dakota	560	740
Dixon	62	734
Holt	17	-
Knox	321	790
Madison	81	350
Pierce	234	-
Stanton	51	521
Thurston	149	714
Wayne	65	580
Average	170	566
Nebraska (Cont'd)		
East Central--		
Butler	11	236
Colfax	322	585
Dodge	232	642
Douglas	244	360
Merrick	28	521
Nance	5	578
Platte	151	554
Polk	5	263
Sarpy	155	249
Saunders	54	163
Washington	-	468
Average	121	420
South Central--		
Hamilton	8	226
York	9	86
Average	8	156
Southeast--		
Cass	38	32
Gage	17	3
Johnson	47	38
Lancaster	59	70
Nemaha	87	49
Otoe	35	28
Pawnee	41	118
Richardson	30	33
Saline	30	-
Seward	25	129
Average	41	56
State mean comparable counties (32)	116	350

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954
New Hampshire (State Dept. of Agr.)		
Belnap	32	87
Carroll	16	51
Grafton	17	12
Hillsboro	5	37
Merrimack	35	49
Rockingham	19	46
Strafford	4	40
Sullivan	54	—
State mean comparable counties (7)	18	46
New Jersey (State Dept. of Agr. and Ext. Ser.)		
Burlington	97	46
Camden	128	63
Cumberland	79	31
Gloucester	74	56
Hunterdon	28	12
Mercer	39	36
Middlesex	105	25
Monmouth	83	29
Salem	35	16
Somerset	11	3
Sussex	12	3
Warren	14	16
State mean comparable counties (12)	59	28

State and county	Average number of borers per 100 plants 1953	1954
New York (Agr. Expt. Sta., Geneva, and State Dept. of Agri. and Markets)		
Albany	3	4
Broome	-	12
Columbia	30	3
Cortland	-	5
Erie	23	5
Greene	125	78
Livingston	14	9
Monroe	7	T
Nassau	89	60
Niagara	15	7
Oneida	1	-
Onondaga	35	4
Ontario	5	4
Orleans	21	T
Otsego	-	3
Saratoga	2	5
Schenectady	3	4
Steuben	-	22
Suffolk	183	92
Ulster-Dutchess	29	-
Wayne	6	7
State mean comparable counties (15)	37	19

Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants	
	1953	1954
North Dakota		
(Agr. Expt. Sta.)		
(Ext. Ser.)		
Adams	-	0
Barnes	24	22
Bottineau	-	8
Cass	50	62
Dickey	58	48
Divide	-	0
Dunn	Tr.	4
Eddy	6	6
Grand Forks	46	12
Grant	-	8
Kidder	2	10
La Moure	49	40
McKenzie	Tr.	0
Morton	75	20
Oliver	Tr.	16
Pembina	7	12
Pierce	-	-
Ransom	51	63
Richland	51	98
Sargent	35	48
Towner	-	18
Trail	40	43
State mean comparable counties (16)	31	32
Ohio		
(Agr. Expt. Sta. and Ext. Service)		
Northwest--		
Allen	20	110
Fulton	114	114
Hancock	20	164
Ohio (Cont'd)		
Henry	63	79
Lucas	41	106
Ottawa	34	29
Paulding	35	193
Putnam	44	284
Van Wert	65	185
Williams	31	54
Wood	94	100
Average	51	129
West Central--		
Auglaize	32	166
Champaign	27	98
Clark	60	173
Darke	114	262
Logan	17	60
Mercer	46	240
Miami	122	193
Shelby	15	90
Average	54	160
Central--		
Delaware	37	82
Fayette	25	44
Licking	73	-
Madison	20	61
Pickaway	81	186
Average	47	93
Southwest--		
Butler	162	301
Clinton	43	145
Greene	88	196
Highland	66	79
Montgomery	124	235
Preble	132	317
Warren	89	238
Average	100	216
State mean comparable counties (30)	62	153

Table 2. -- (Cont'd)

State and county	Average number of borers per 100 plants	
	1953	1954
Pennsylvania		
(State Dept. of Agr. and Ext. Ser.)		
Northwest --		
Crawford	6	Tr. *
Erie	2	1
Mercer	12	Tr.
Average	7	Tr.
North --		
Lycoming	2	6
Northeast --		
Wyoming	-	Tr.
West --		
Indiana	21	27
Lawrence	-	3
Average	21	15
Central --		
Juniata	6	31
Perry	9	23
Snyder	4	10
Union	2	9
Average	5	18
East --		
Lehigh	63	13
Luzerne	12	1
Northampton	18	3
Average	31	6
Southwest --		
Fayette	52	120
Greene	73	45
Somerset	42	-
Washington	70	54
Westmoreland	36	47
Average	55	66
Pennsylvania (Cont'd)		
South --		
Adams	83	15
Bedford	6	-
Cumberland	34	27
Franklin	66	25
Fulton	-	12
York	39	14
Average	62	19
Southeast --		
Berks	84	10
Bucks	87	7
Chester	177	10
Delaware	166	-
Lancaster	95	13
Lebanon	21	8
Montgomery	80	9
Average	101	10
State mean comparable counties(26)	48	20
*Tr. Less than 1		
Rhode Island		
(State Dept. of Agr. and Conservation)		
Bristol-Newport	124	26
Kent	103	31
Providence	38	48
Washington	164	66
State mean comparable counties (4)	107	43

Table 2. --(Cont'd)

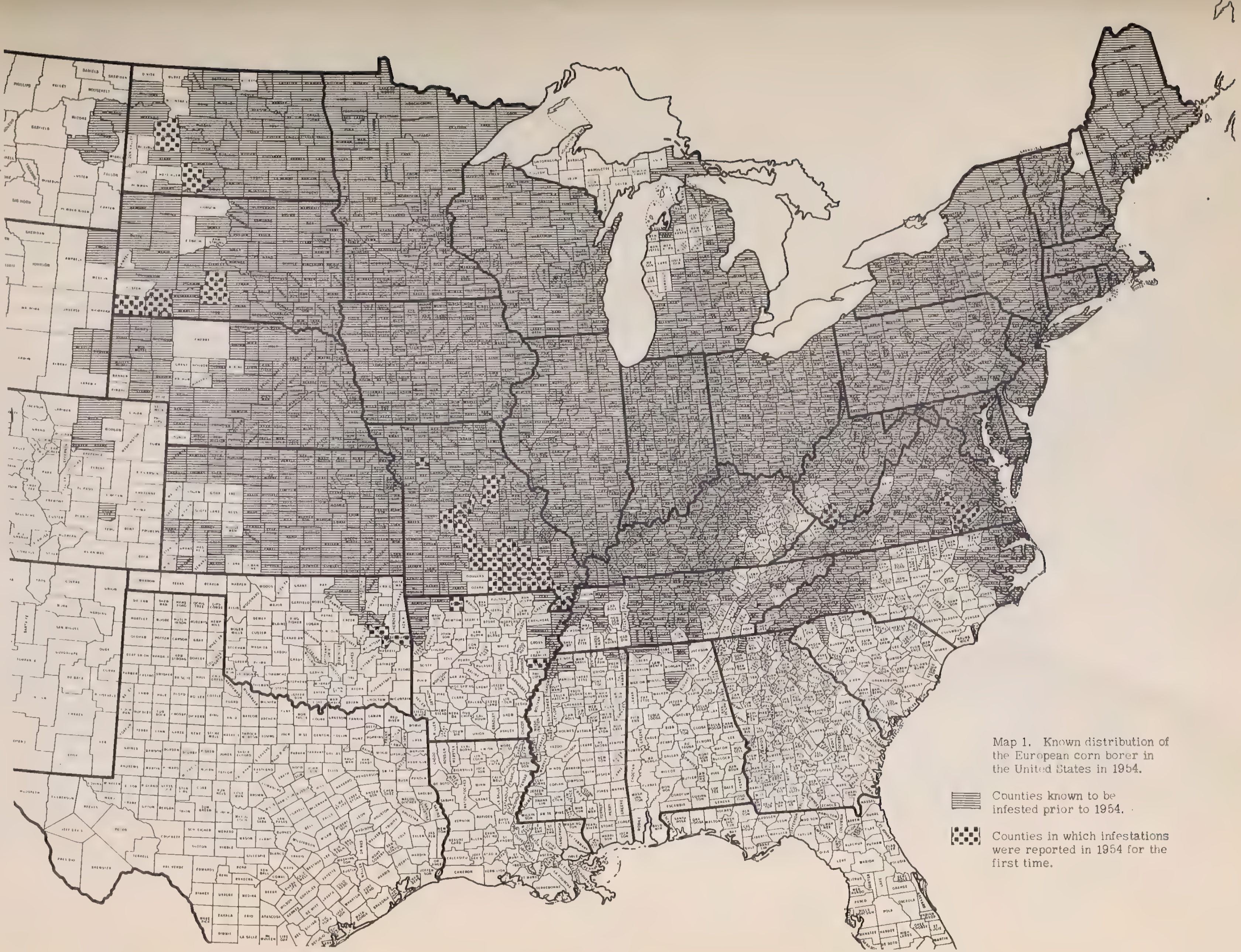
State and county	Average number of borers per 100 plants	
	1953	1954
South Dakota (Agr. Expt. Sta. Ext. Ser.)		
North Central --		
Brown	123	118
Edmunds	119	84
Faulk	217	226
Potter	136	141
Spink	192	487
Average	157	211
Northeast --		
Clark	116	99
Codington	148	110
Day	102	68
Deuel	58	140
Grant	84	138
Hamlin	151	315
Marshall	94	212
Roberts	150	128
Average	113	151
Central --		
Buffalo	95	184
Hand	233	331
Hughes	193	126
Hyde	70	164
Jerauld	412	427
Sully	184	81
Average	198	219
East Central --		
Beadle	304	556
Brookings	263	374
Davison	216	465
Hanson	355	542
South Dakota (Cont'd)		
Kingsbury	125	352
Lake	271	332
McCook	206	490
Miner	239	464
Minnehaha	309	800
Moody	230	238
Sanborn	171	175
Average	244	435
South Central --		
Aurora	180	136
Brule	-	163
Charles Mix	412	860
Douglas	333	667
Average	308	456
Southeast --		
Bon Homme	614	697
Clay	281	664
Hutchinson	489	885
Lincoln	815	758
Turner	234	874
Union	848	941
Yankton	521	1,126
Average	543	849
State mean comparable counties (40)	257	399

Table 2.--(Cont'd)

State and county	Average number of borers per 100 plants	
	1953	1954
Vermont		
(State Dept. of Agr.)		
Addison	7	-
Bennington	17	-
Chittenden	6	2
Franklin	8	-
Grand Island	11	6
Orange	4	3
Rutland	9	-
Washington	2	3
Windham	4	-
Windsor	6	7
State mean comparable counties (5)	6	4
Virginia		
(Agr. Expt. Sta.)		
Augusta	170	99
Frederick	102	118
Rockbridge	10	-
Rockingham	185	113
Shenandoah	149	182
Smyth	211	145
Washington	166	139
Wythe	247	78
State mean comparable counties (7)	176	125
West Virginia		
(State Dept. of Agr.)		
Mason	13	2
Nicholas	14	12
Ohio, Brooke, Marshall	81	24
State mean comparable counties (3)	36	13
Wisconsin		
(State Dept. of Agr.)		
Northwest--		
Barron	128	
Burnett	10	
Chippewa	29	Dist. Sur.
Dunn	58	
Eau Claire	12	
Pierce	56	
Polk	18	
St. Croix	32	
Washburn	0	
Average	40	31
North Central--		
Clark	5	
Langlade	0	
Lincoln	0	Dist. Sur.
Marathon	23	
Rusk	17	
Sawyer	24	
Taylor	2	
Average	13	9

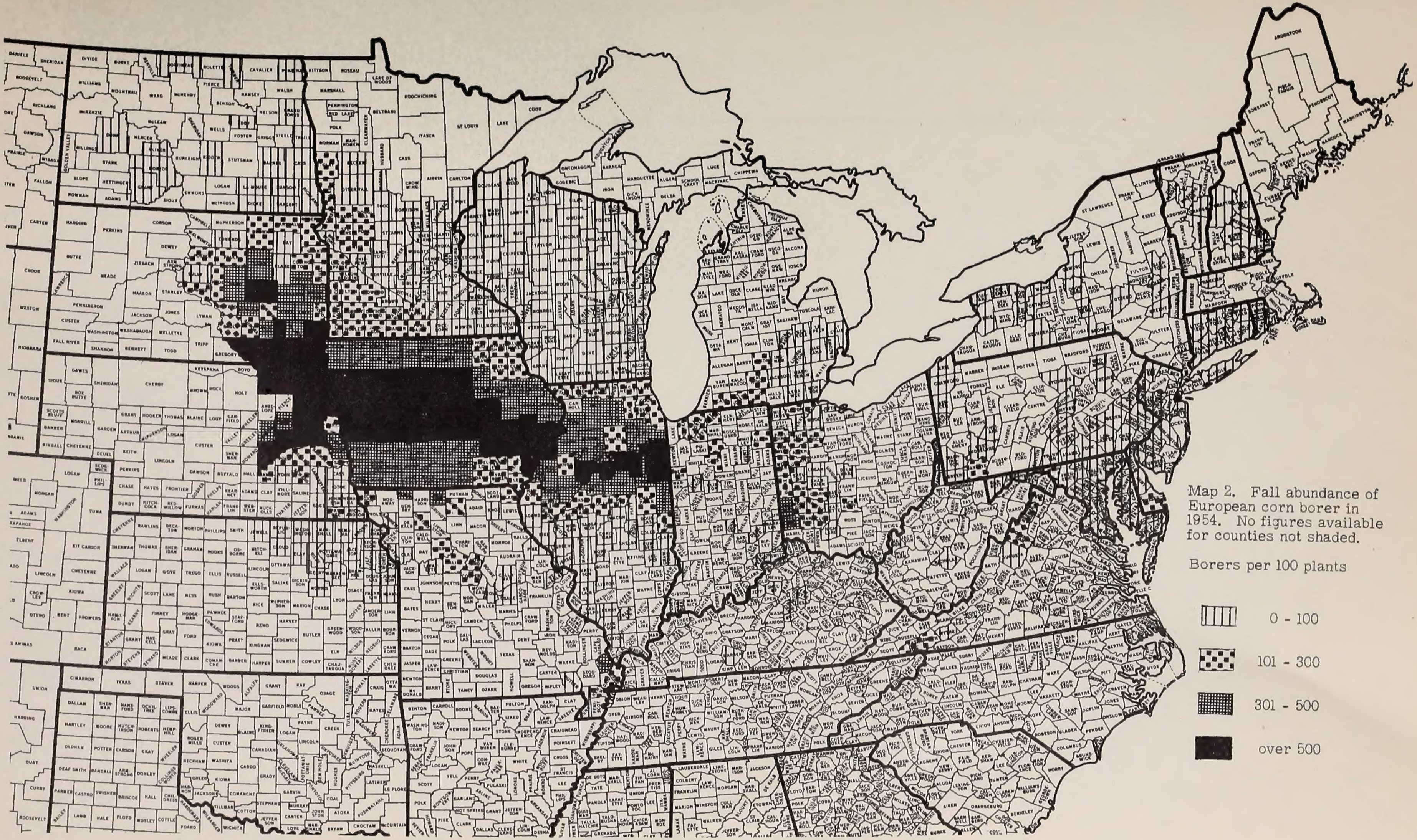
Table 2. --(Cont'd)

State and county	Average number of borers per 100 plants 1953	1954
Wisconsin (Cont'd)		
Northeast--		
Brown	24	
Calumet	6	
Door	7	Dist.
Kewaunee	10	
Manitowoc	8	Sur.
Marinette	81	
Oconto	3	
Shawano	11	
Average	16	49
West Central--		
Buffalo	19	
Jackson	16	
La Crosse	24	Dist.
Monroe	29	
Pepin	24	Sur.
Trempealeau	63	
Vernon	18	
Average	28	15
Central--		
Adams	4	
Fond du Lac	25	
Green Lake	57	
Juneau	16	Dist.
Marquette	11	
Outagamie	29	Sur.
Portage	14	
Waupaca	12	
Waushara	2	
Winnebago	74	
Wood	7	
Average	26	23
Wisconsin (Cont'd)		
Southwest--		
Crawford	31	
Grant	107	Dist.
Iowa	40	
Lafayette	39	Sur.
Richland	28	
Sauk	42	
Average	52	33
South Central--		
Columbia	31	
Dane	2	
Dodge	7	
Green	58	Dist.
Jefferson	27	
Rock	60	Sur.
Walworth	18	
Average	29	24
Southeast--		
Kenosha	16	
Ozaukee	6	
Racine	5	Dist.
Sheboygan	19	
Washington	5	Sur.
Waukesha	5	
Average	9	41
State mean comparable districts (8)	27	28



Map 1. Known distribution of the European corn borer in the United States in 1954.

▤ Counties known to be infested prior to 1954.
▦ Counties in which infestations were reported in 1954 for the first time.



Map 2. Fall abundance of European corn borer in 1954. No figures available for counties not shaded.

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